DOCUMENT RESUME

ED 334 060 SE 052 098

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TITLE Variables Influencing the Meaning of Labels in Qualitative Research.
PUB DATE Apr 91
NOTE 14p.; Paper presented at the Annual Meeting of the National Association for Research in Science Teaching (Lake Geneva, WI, April 7-10, 1991).
PUB TYPE Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Educational Research; Interviews; *Models; Philosophy; *Qualitative Research; Research Design; *Science Education; *Semantics; Social Sciences; Vocabulary

ABSTRACT

This study sought to identify the variables which influence the meanings of labels used by science education researchers doing qualitative research. In a qualitative emergent design study, participant observation, informal interviews, and document review were used to gather and analyze data in recurring cycles. Presentations and discussions among qualitative researchers at National Association for Research in Science Teaching conferences and Journal of Research in Science Teaching articles were the primary data source. Secondary data sources included qualitative research methodology articles from other areas of education, philosophy, and the social sciences. The glossaries generated from the meetings and the readings were compared for clues to relationships among the ways various authors used labels and for the variable that influenced the way the labels were used. A concept of a research tradition played a dominant role in developing the emergent model. A theoretical model of variables that influence the meanings science education researchers construct for labels in qualitative research emerged and consisted of the: (1) pluralistic nature of qualitative research; (2) research traditions from philosophy and the social sciences; (3) societal paradigm shift and its impact; (4) debate between quantitative and qualitative researchers; and (5) multiple applications of qualitative research in science education. The model suggests that the criteria for acceptance of the meaning of a label be the label's congruence with the context of the tradition in which it is used rather than its consistence with an isolated definition. A 50-item bibliography is provided. (KR)

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ED334060

NARST Conference
the abbey on lake geneva
Fontana, Wisconson
April, 1991

VARIABLES INFLUENCING THE MEANING OF LABELS IN QUALITATIVE RESEARCH

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Variables Influencing the Meaning of Labels in Qualitative Research

Purpose

The purpose of this study was to identify the variables which influence the meanings of labels used by science education researchers doing qualitative research.

Significance

Knowing the variables influencing the meanings of labels in qualitative research helps explain the current disparity and subsequent confusion in the use of labels among science education researchers. This has potential to enhance communication in our enterprise. Further, it may reduce the likelihood of significant studies being evaluated negatively, because, in the absence of consensus about appropriate use of labels, a manuscript reviewer is inclined to apply the vocabulary and method inherent in the qualitative tradition in which he/she was trained as criteria for reviewing studies which may have been conceived in another qualitative tradition.

Design and Procedure

This was a qualitative emergent design study in which participant observation, informal interviews, and document review were used to gather and analyze data in recurring cycles. The following questions emerged from the data and determined the procedure and the sequencing of steps in the study.

- What are the various meanings attached to labels used in qualitative research discussions at NARST conferences?

- Why is there disparity in the way science education researchers use labels in qualitative research?

- How were individual researchers in science education introduced to qualitative methodologies?

- How are labels used in qualitative research in philosophy and the social sciences (anthropology, psychology, sociology)?

- What relationships are there between the labels used in science education and the labels used in qualitative research in the rest of the educational enterprise?

- How do evaluation researchers use the language of qualitative research?

A list of labels used by science education researchers doing qualitative research and their apparent definitions was generated from participant observation during the past five years at NARST conference sessions in which qualitative research studies were reported and at other sessions focusing on qualitative research methodology. Informal interviews were conducted with people in science education to find out how they learned to do qualitative research. Samples of qualitative research methodology articles from the disciplines that influenced science educators' perspectives on qualitative research were reviewed. Selected qualitative methodology books written by evaluation researchers were reviewed.

Documents distributed at the NARST meetings and articles appearing in the Journal of Research in Science Teaching related to qualitative research beginning in 1982 were searched for insight into the meanings of labels collected at the conference sessions. Other labels were added to the list from the readings. A glossary of prominent labels was developed from each document reviewed describing the way the labels were being used and, where available, specific definitions. The glossaries of all the readings were combined into one alphabetical list showing the various meanings and the authors who subscribed to that meaning. Meanings of labels from one source were constantly compared to meanings of labels from other sources. A second schema was developed in which the glossary labels were organized according to function, e.g., terms related to data gathering, to data analysis, to criteria for evaluating a product, etc. The glossaries were constantly examined for clues to relationships among the way different authors used labels and for the variables influencing the way the labels were used. Finally, a theoretical

model grounded in the data was generated identifying variables which influence the meaning of labels used in science education qualitative research.

Findings

There was no apparent consensus among science educators on the definitions of labels in use in qualitative research. In some cases the same word was being used by different people to label different concepts. On the other hand, different people used different words to label the same concept. This disparity in the meanings of labels in science education reflected the disparity in the meanings of labels in other areas of educational qualitative research and in social science research. Scholars in education in general and in the social sciences have not been successful in developing a single classification system to clarify the meanings of labels being used in qualitative research. A significant variable which influenced the meanings of labels in science education was that individual science education researchers adopted or adapted different research approaches used in a wide variety of other disciplines, especially philosophy and the social sciences.

Within each of the disciplines from which science educators derive guidance, there was great variety in the way scholars in each discipline used their own labels. In addition, there were a variety of qualitative research traditions used in each discipline. Kuhn (1970) pointed out that a research tradition exists when a group of researchers in a discipline or subdiscipline agree upon the assumptions about the nature of the universe, the focus of study, and the method for study. In Jacob's work to reduce the confusion about qualitative research in the educational enterprise, she suggested internal consistency

among the three elements forming a coherent whole, a tradition, be used as criteria to assess the efficacy of a study. We agree, because words have one meaning within the context of one tradition and another meaning within the context of another tradition.

The societal paradigm shift to a new world view is contributing to the multiple meanings of labels. A person's world view is the context which influences the attributes he/she ascribes to a word used as a label to convey a concept. The new world view emerging, the new paradigm, is a new lens influencing what we see. Words we have used to describe and explain the world as we have known it under one lens take on new meaning when viewed under this new lens, thus, adding to the plethora of interpretations of labels in qualitative research.

Another variable which contributed to the disagreements about the meaning of labels and subsequent criteria for acceptance of manuscripts emerged from the debate between qualitative and quantitative researchers. Qualitative research was defended as if it were a homogeneous entity. However, qualitative research is not a homogeneous approach, not a single research paradigm, not a monolithic methodology, nor a specific method. It is an umbrella term for a conglomerate of research traditions with some common features. A significant part of our puzzlement came from generalizing features found in the various traditions in response to quantitative researchers when these features were not common to all the qualitative research traditions.

The numerous applications of qualitative research contribute to the multiplicity of meanings for labels we use. This is not surprising, since meaning is derived from the context in which words are used. Qualitative research has been used in science education to: investigate basic and applied questions; to evaluate programs, teacher behaviors, and student learning; to design change strategies; to formulate policy; to generate new knowledge by identifying variables, generating hypotheses, and building theories; and to test and confirm hypotheses. The language used by evaluation researchers had a significant impact on meanings of labels in science education research.

Conclusion

A theoretical model of variables which influence the meanings science education researchers construct for labels in qualitative research emerged and consists of the:

1. pluralistic nature of qualitative research,
2. research traditions from philosophy and the social sciences,
3. societal paradigm shift and its impact
4. debate between quantitative and qualitative researchers, and
5. multiple applications of qualitative research in science education

The model suggested the criteria for acceptance of the meaning of a label be the label's congruence with the context of the tradition in which it is used rather than its consistence with an isolated definition. Enhanced

communication, then, does not come about by generalizing meanings of labels, or arbitrarily, alone or collectively, setting absolute parameters on labels. Instead it occurs because researchers accept the productive tension needed to foster creativity between keeping an open-mind and maintaining a standard and science education researchers familiarize themselves with a wide range of qualitative research traditions in use world wide. Further, the multiple meanings of labels used in science education research should be viewed as an advantage rather than as a problem. We can develop a holographic view of our enterprise by accepting the various traditions as options which provide multiple perspectives, thus a richness of insight and understanding with which to improve the teaching and learning of science.

Additional findings are explicated in the Fourth NARST Monograph on Interpretive Research in the chapter by Barbara S. Spector and Merton L. Glass.

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